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A SCIENTIFIC RESEARCH ON AN OTTOMAN SUPERSTITION: DO THE CELADONS CHANGE THEIR COLOR WHEN TOUCHED BY A POISON ?

OSMANLI DÖNEMI'NE AİT BİR BATIL İNANCA DAİR BİLİMSEL ARAŞTIRMA: ZEHİR SELADONLARIN RENGİNİ DEĞİŞTİRİR Mİ?

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ABSTRACT

This study aims to investigate whether there is a scientific reality within the popular belief of celadon demonstrating the poison. Thus, its use in the Ottoman Empire which contributed to the establishment of significant collection of celadon in the world was taken as the basis of this study. For this purpose, some similar superstitions and poisons in the world were studied. Accessible chemicals especially used in Ottoman Empire were selected and tested for the verification of toxicity with celadons.

It has been understood that the celadon, main subject of this study, is resembled to jade stone which was the most precious stone in early times of Far East and believed to protect from poison. Poisoning is remarkable as it can happen to anyone no matter what class they belong to and this concern was used to earn more money by merchants who took roads between East and West.

Chemical compounds which were used in daily life such as make-up materials were also used as weapons for poisoning in the Ottoman period. When these chemicals were tested with celadon, it has been observed that no color change has occurred. It also has been proved through these experiments that celadons don't protect from poisoning as antecedents thought.

Keywords: celadon, poison, Ottoman pottery, superstition, traditional Turkish pottery, Chinese porcelain, toxic, antidote

ÖZ

Bu çalışmada popüler bir bilgi olan seladonların zehiri belli etmesine dair olan inanışın bilimsel bir gerçekliğinin olup olmadığını araştırmak hedeflenmiştir. Bu amaç doğrultusunda Dünya'daki benzer inanışlar araştırılmıştır. Osmanlı İmparatorluğu'nun Dünyadaki en önemli üç seladon koleksiyonlarından birine sahip olması nedeni ile Osmanlı Döneminde kullanılan bazı zehirler, seladon bünye üzerinde denenmiştir.

Ulaşılabilen ilgili yayınlardan, çalışmanın konusu olan seladonların Uzakdoğu da, en değerli taş olan yeşim taşına benzediği ve yeşim taşının zehiri belli ettiğine dair, inanışın olduğu anlaşılmıştır. Bilerek ya da bilmeyerek zehirlenmenin sınıf ayrımı olmaksızın herkesin başına gelebileceği için dikkat ile ilgi uyandırdığı ve bu ilginin, ürünlerini daha değerli kılmak için 16. yy'da Uzakdoğu'dan ürün getiren tüccarlar tarafından değerlendirildiği görülmüştür.

Osmanlı Döneminde makyaj malzemesi gibi günlük yaşamda kullanılan, aynı zamanda zehirleme silahı olan kimyasal bileşikler, seladon bünye ile denendiğinde, herhangi bir renk değişimi olmamıştır. Ayrıca bu deneylerle seladonların, ataların düşündüğü gibi zehirlerden korumadıkları anlaşılmıştır.

Anahtar kelimeler: seladon, zehir, Osmanlı seramiği, batıl inanış, çini, Çin porseleni, toksik, tiryak, panzehir.

Fig. 1. Celadon Dish Yuan Dynasty late 13th to early 14th century Topkapi Palace Museum TSM 15/260

1. INTRODUCTION

Many people thrive to describe unidentified events with their beliefs and these beliefs vary in accordance with the cultures of the societies. This study aims to investigate whether there is a scientific reality within the popular belief of celadon demonstrating the poison. Thus, its use in the Ottoman Empire which contributed to the establishment of significant collection of celadon[1] in the world was taken as the basis of this study. For this purpose, some similar superstitions and poisons were studied. Accessible chemicals among these ones especially used in Ottoman Empire were selected and tested for the verification of toxicity with celadons by the second author of this paper, Ungsoo Kim, who is a material scientist in Korea, 2013.

2. HISTORY AND GENERAL INFORMATION ABOUT POISON AND POISONING:

“First known poisons were obtained from plants saps, animal venoms and minerals. They were used at the edges of arrows. The Ebers Papyrus is the earliest medical record (circa 1500 BC, that contains definitions of various poisons that contain hemlock (Conium maculatum, baldıranotu), aconite (Helleborus niger, monkshood, an arrow poison of the ancient Chinese), opium (used as both poison and antidote), lead, copper, antimony (rastık taşı- mascara stone), arsenic, adamotu (Mandragora autumnalis, kankurutan) and Cyanogenic glycosides” (Tunçok 2012: 1). Poisons have become more varied today.

In the studies of Paracelsus (1493-1541), a physician and “Fathers of Toxicology”, is quoted saying that: “All substances are poisons; there is none which is not a poison. The right dose differentiates a poison and a remedy” (Radenkova, 2008: 47). In the history, it can be seen that there were also incidents of poisoning by accident or poisoning caused by unawareness besides deliberate attempts. As the poisonous substance could be used to poison someone itself, its reaction or interaction with another substance also could cause poisoning.

“After the discovery of America, tomatoes were brought to Europe and the well situated folks had plates made of pewter (Candlin, 1981) while others were using wooden trenchers during that times. Pewter plates contained lead about 30% at most. Food with high acid content caused some of the lead to leach onto the food, causing lead poisoning and death. This happened mostly with tomatoes and for the next 400 years or so, tomatoes were considered poisonous. There was indeed a belief that the plant was poisonous, primarily due to its resemblance to belladonna and deadly nightshade” (Yeboah, 2015: 5).

[1] “Celadon wares in the Topkapı Saray were nearly all made in the area of Longquan in Zhejiang in 13 th to the late 15 th century” (Krahl, 1986: 233).

As pewter plates, tin free cups[2], lead glazed ceramics (Fralick vd. 2016: 17-18) and silvered plate glass (No Authors -Hints and Notions, 1884: 224) are the other kitchen utensils that have been found out to be poisonous in time.

There are lots of poisoning victims in different cultures and civilizations besides some notable ones as Socrates (399 BC) (Tunçok 2012: 1), Cleopatra (Radenkova 2008: 47). Seljuk Sultan Alaeddin Keykubad (1237) (Redford 1993: 220), Ottoman Sultan Bayezid I (1403) (Sakaoğlu 2010: 60) and Sultan Abdülaziz (1876)[3] are the best known victims among the Turks.

3. SOME OTHER BELIEFS AS POISONING PROTECTORS İN THE WORLD'S HISTORY:

Globally, it can be seen that, some superstitions have also developed along with various antidotes found against poisoning. It is also observed that such beliefs may vary due to geographical and cultural interactions. "For instance, in England during the 15th century, unicorn horn, coco-*nut*-cups and lodestones were the objects that believed to protect from poison" (Ettlinger 1943: 227- 249). In America, almost all gems were believed to have remedial value by Indians. "Sapphire was used as an antidote for poison, and jade as a cure for kidney disease" (Forrest 1951: 122). Precious stones were used for making medicines also in the Ottoman Empire.

Fig.2. Jade dragon cup (made around 1430)[4]

"During the early times, in Far East, jade was the most important material that showed the poison besides lots of remedial specialties. Jade is the common term for an extremely hard mineral called nephrite. Ancient Chinese valued jade more than any other gems or stones or even precious metals, including gold. Jade was a symbol of wealth, power, and excellence due to its rarity" (Roberts 2010: 61, For jade Stone's value and usages see also: Chau Ju-kua and others 1911: 90, Hogarth 1999: no page numbers).

Beside Ancient China, it was also important for Central Asia: "The tenth-century polymath al-Biruni noted that the Turks called it the 'victory stone', and decorated their swords, belts and saddles with jade" (The British Museum; (Accessed in August 12, 2014). "In Samarqand the most famous jade piece of all was naturally the tomb of Timur, secured by his grandson Ulugh Beg in 1425" (Pinder-Wilson and Watson, 1960: 19, 21).

[2]"…and one of these is not to eat the sour food kept in untinned, containers made of copper, which have been kept in there for some time…."(Tuğ, 2000: 107)

[3]"The English Ambassador said `It still has a strong smell of chloroform, I could not stay in there for long `after he visited the Sultan" (Akman and others, *Kloroform Zehirlenmeleri*, Accessed in August 9, 2018).

[4] "A Jade Cup Inscribed With The Name Ulugh Beg Gurgan. Chinese or Central Asian. Early 15th century" (Wilson and Watson, 1960: 23; See also: 100 Objects British Museum, Jade Dragon Cup; (Accessed in July 20, 2018).

Fig.3. Gold bowl, with bezoar stone attached. Russo- Islamic. Thirteenth Century. (Born 1936: 269)

Bezoar stone was also one of the protection items used against poison in Far East[5] and Europe[6]. "The bezoar stone is a concretion that forms in the stomach or intestines of many animals, including goats, deer, horses and cows. The stones were placed in drinks to determine if they had been poisoned.In addition, they were also powdered and swallowed to protect people from poison" (Webster 2008: 29, Ferrier 1976: 201).

In addition to these, in the past – and even today, in Europe and Asia, the rhinoceros horn was believed to be effective in protecting people from poisoning besides being a preferred container material for beverages or drinks amongst the executive authorities[7]."Popes and kings used to carry rhino-horn cups with them as poison detectors. Legend has it that poisoned drinks would cause the cup to explode" (Raloff 1979: 347). Rhinoceros are still being killed for these kinds of superstitions (Milliken and Shaw 2012).

Arab historian Masudi (896- 956) says that, in his time, "there was a great trade in rhinoceros horns with China from Rahma in India….. Asiatics believe that rhinoceros horn detects the presence of poison, as tortoise-shell" (Chau Ju-kua1911: 233, 238). Tortoise shell, which was among several items of trade either produced or sold in Lambria, was believed to be capable of detecting poison. Tortoise shell has been imported into China for about two millennia where it is used extensively for decorative purposes (McKinnon 1988: 113).

During Ottoman Empire, there was another fired clay wares besides celadon used as a protector. "It was determined by the researches of Julian Raby that Ottomans import clay from Limni Island, which was against the poisoning, shaped by the potters of İstanbul- Eyüp. However, the speciality of these vessels suggests that they are not sold in the regular market. The presence of such small jugs in the European palaces (Tin-i Mahtum) indicates that they were sent as gifts by the Ottomans" (Yenişehirlioğlu 2012: 86).

4. BEGINNING AND REASONS OF RELATION BETWEEN CELADON AND POISON:

Celadon, the subject of this study which is a type of a Chinese porcelain produced before the blue-white colored ones, is believed to have protective powers against poison. However, it cannot be proved when this belief first originated.

Chinese porcelain was preferred in the West as it was a porcelain product. They were first used in the Near East in the 9th century (Lane 1948: 3, Meade and others 1968: 170, Raby 1986: 55, Hobson 1909: 164). Ottomans started using in the 15th century (Raby and Yucel 1986: 28), Europe started by the end of the 13th century, thanks to Marco Polo (Sadberk Hanım Museum Collection, 1995: 117) and as gifts from the East[8]. However it gained popularity in Europe with the efforts of the Dutch East India Company established in 1609 (Küçükerman 1987: 20).

[5] "In Malabar, the mo-so Stone (bezoar stone), worn in a finger-ring, if one is poisoned and licks it, one is at once cured; so it may well be considered as a life preserver"(Ju-Kua and others, 1911: 90).

[6]"…there is no doubt that gold bowl (the Asiatic work of the fifteenth century and has two handle of European baroque work and a bezoar stone is attached by a chain) was used at one of the courts of the Renaissance, the table-ceremonies of which were dictated by the fear of poison……." (Born, 1936: 273).

[7]Europe in 1665: "The gravest mandarins of China, for greater splendour and pomp on the tables they set before their guests and at banquets do not give bowls of glass to drink from, but only cups with graceful carvings of the hard horn of the rhinoceros, esteeming that wine drunk in those will make men drink more freely and with more enjoyment that he who drinks there is free from all suspicions of poison…"(Lightbown, 1969: 261; See also: Ettlinger, 1943: 229).

[8]"Another interesting survival is a large celadon dish in the Museo degli Argenti, Florence, traditionally said to be presented to Lorenzo de' Medici by the Sultan of Turkey" (Lightbown, 1969: 229).

Ottomans preferred porcelain amongst all types of earthenware for prestige besides the other reason rooted in the religion of Islam[9]. Apart from these two reasons, the first document proving its use for protection from poison is from the period of Sultan Selim II (1566-1574) (Gerlach 2007: 401- 402).

In Europe, it is possible to conclude that the belief that items such as rhinoceros horn, bezoar stone and celadon detecting poison was spread by the European merchants of the 16th century for promotion purposes, so that these items were widely recognized in Europe. "…because of the difficulties connected with obtaining the porcelain from Chinese by Dutch East India Company (1602), in order to enhance the value of their wares, they told all kinds of fabulous stories about the materials. They pretended that bones, fish-scales marine shells, egg-shells and other substances were employed,…..They claimed all kinds of wonderful properties for the manufactured articles, for instance, that in their extreme delicacy, the fragile drinking cups were so sensitive to poison, that its contact would cause them to shiver into a thousand pieces or in other cases would produce a bubbling motion in the center of the liquid" (Haywood 1890: 79).

It can be seen that the thought that the merchants have fabricated this superstition to make more sales was prominent in Paris in 1557."…We shall add a fourth created by the superstition and imposture of merchants. For they say that it cannot bear poison, but breaks apart. ….."[10]

Although the resources show that in Europe, unlike the Ottoman Empire and Iran, Chinese porcelain was mostly used for decorative purposes (Carswell 2000: 129). It could be stated that another reason to prefer celadon that it was a healthy alternative to the unhealthy and fatal tableware, such as pewter used by the aristocracy in Europe.[11] In the Ottoman Empire, pieces of Chinese porcelain were collected to be used (Raby and Yücel 1986:27).

People were interested in celadon as it resembled the precious jade stone[12] in the East, unlike the Western societies and the belief concerning its protective powers against poison belonged to the Western people. "It is very instructive that this belief is only reported from Indonesia, the Malay Peninsula, India, Persia, and Egypt, where celadon was regarded as a rarity, but not from China where celadon was made" (Ettlinger 1943: 229).

It can be seen that poison is a material drawing public interest. For example: "….by the end of the 19th century, cases of poisoning in the United States were so common, that it could be said that people were afraid of poisoning as it was an epidemic illness. Although, only one percent of the homicide cases submitted to courts were related to poisoning, the media took an interest in these cases, especially the ones related to women poisoning their husbands. In the mid 19th century, the panic caused by the incidents of poisoning in England, the main concern of the public was the women committing homicide with this method" (Aykut 2010: 60).

It can be observed that this effect of poison, the ability to intrigue people, has been used in modern days especially in the announcements of exhibitions[13] concerning Chinese porcelain or Ottoman artifacts for years (Savage 1961: 47). However, researchers as John Carswell, believe that it is redundant to repeat this interesting information in recently published books." …..and it is sad to have repeated once again the old, mistaken tale that nervous sultans thought they could detect poison by having their dinner served on celadon dishes……"(Carswell 1996: 146). It is inevitable not to agree with John Carswell. Today, this attention on poison still continues. An exhibition on poisons titled "The Power of Poison" took place at American Museum of Natural History between November 2013 and August 2014 (American Museum of Natural History; (Accessed in July 26, 2018).

5. POISONS USED DURING THE PERIOD OF OTTOMAN EMPIRE:

This study aims to examine if some plants and minerals with high poisoning characteristics used by the Ottomans as a part of their daily lives chemically react with celadon. As the poisons are not in our occupations, names and information of poisons used during the period of Ottoman Empire were transferred

[9] "Prophet Muhammad: Do not drink from gold and silver vessels and do not eat from gold and silver plates, because indeed they are for them in this world and for you in the Hereafter. A person who drinks or eats from a silver or golden dish merely swallows into his stomach the fire of Hell" (Sahih-i Buhari Muhtasarı Tecrid-i Sarih, 2004: 700, 712; See also: Pala, 2012: 34- 50).

[10] Quote from "*J. C. Scaliger, Exotericarvm Exercitationvm Liber Quintvs Decimvs, de Svbtilitate, ad Hierony-mvm Cardanvm, Paris, 1557"*(Lightbown, 1969: 231); "Drinking from a porcelain cup was thought to provide protection from arsenic, mercury, and aconite, a poisonous plant" (Gleeson, 1998: 51).

[11] for the effects of wooden and unglazed earthenware vessels, see: Janse, 1944: 37.

[12] "..... the origin of the colour was a desire to make imitations of jade vessels in this material, a greenish gray being the colour most commonly found in Chinese jade" (Lyle, 1903: 245).

[13] For example newspapers see: Wilson William, 1992; Eyman Scott, 2010; Righter Rosemary, 1996.

from the publications constituted by documents, without any evaluation. We have not encountered a scientific study carried out for the belief on celadon changing colour when touched by a poison.

In the Ottoman Empire, poisonous ingredients were parts of the daily life as used for various purposes (Kocacık ve Mat 2014: 21-38). Medicines and poisonous substances were freely produced and sold by unqualified doctors and pharmacists, street vendors, herbalists (aktar), root sellers (kökcü), paste makers (Macuncu) etc. In addition to the professional pharmacists and pharmacies, as a result, a lot of cases occurred where the common people were accidentally poisoned. "Thus, in the Ottoman Empire during the 19th century, herbalists and root sellers were restrained from selling poisonous substances such as fish berry (balık otu, Anamirta cocculus), wormseed (Horasani, Artemisia cina), black hellebore (karaçöpleme, Helleborus niger), Jimson weed (Tatula otu, Datura stramonium) (Dısel and the others 2015: 51-55), cantharides (kunduz böceği), semen strychni (Cevzü'l-kay, Strychnos nux-vomica L.), colocynth (Ebûcehil karpuzu, Citrullus colocynthis) and blue vitriol (göztaşı) (Yıldırım, 2009-2010: 273- 283)[14]. Corrosive sublimate and arsenic were the most commonly used poisons. Both poisons were available in herbalist as they were used in daily life for different purposes. For example, corrosive sublimate (aksülümen), which composes of mercury and chlorine (Gümüşatam 2010: 1070), was a substance used in cosmetics (Aykut, 2016: 117)[15] highly demanded by the Ottoman women to make their skin lighter. Arsenic (sıçanotu), in some cases mentioned as "semm-ül-fâr" in the documents, was used to kill rats and also as a medicine applied on the scalp to remove lice" (Aykut 2010: 59).

In the Ottoman Empire, poisoning was a commonly preferred method of murder as it was easily accessible and according to the laws, the penalty for murdering someone by poison was not too severe, as the victim could choose not to drink/eat the poisonous substance. "……..a poisoner is liable only when he forces the poisonous substance down the victim's throat, not when the victim consumes the poison voluntarily. The basic rule, therefore, is that a poisoner is not liable for diya if his victim consumes the poison voluntarily with his own hand.……the poisoner's victim has the option not to consume the poison" (Imber 1994: 206, 214). "Also, as poison was not a weapon primarily designed to kill, person who committed homicide by poison was not tried for premeditated murder" (Aykut 2010: 64).

The poisonous substances used in this study have been obtained from two publications[16] serving as documents related with the Ottoman Palace. First reference is included in the drug names dictionary, (RT=): Ramazan Tuğ, *Poisons and antidotes according to Gunyetü'l Muhassilin and an 18th century Ottoman pamphlet*[17]. The second reference is included in collection of various resources and documents (AB=): Arif Bilgin, titled *The herbs used to make medicine in the Ottoman period*[18]. The names of the plants given in these two resources were compared with the toxic plant names[19]published by the "Turkish Ministry of Agriculture and Rural Affairs General Directorate of Protection and Control", and with the plants which also have poisonous characteristics used in the daily life of the Ottomans for various purposes. In the table below, the name of the plant in Latin has been given in the first column, the name of the plant or substance in Turkish has been given in the second and the abbreviation of the reference's (as RT or AB), page numbers and the various names used in the references has been mentioned in the third column. The poisonous plants and minerals used during the period of Ottoman Empire are as follows:

Name of the plant in Latin	**Name of the plant in Turkish**	**Reference and the other name used in the publication**
Adonis vernalis	Keklik gözü	AB:9. Aynü'l-hacel
Anchusa officinalis	Sığırdili	AB: 14, 11.Lisân-ı sevr
Anamirta cocculus	balık otu	AB: 14
Aristolochia.	Zerâvend-i tavîl, Zerâvend –i müdevver	RT: 148 Zeravend, AB: 17
Radix aristolochiae rotundae *Aristolochia rotunda*	Dişi zeravend, Erkurtaran- Zeravend-i müdahrec Zerâvend-i Müdevver yuvarlak zeravent:	RT: 148, AB: 17.
Radix aristolochiae longae *Aristolochia longa*	Zerâvend-i tavil (uzun zeravend): Erkek zeravend, boru elması, kümren düleği, karga düleği-	RT: 148, AB: 17.
Artemisia cina	Horasani, acı pelin, vermut	AB: 12 Horasânî

[14]" Copper (II) sulfate, also known as cupric sulfate or copper sulphate was used as an emetic in the past (causing vomiting)."Aksülümen, A Poison of Ottoman Times; (Accessed in February 6, 2018); (Karlsson and Noren, 1965: 331)

[15]in Aykut's manuscript (2016) says aksülümen as *ceruse…. "White lead"* p. 117, but most authorities say that Aksülümen is Hg_2Cl_2. for example see: Etker and Günergun, 2013: 36.

[16] For plant names used in Anatolia at the end of 15th century see: Gürlek, 2011: 123- 145.

[17] Tuğ, 2000:144- 148. (= RT)

[18]Bilgin, 2006: 9- 17. (=AB)

[19] Koç, "Zehirli Bitkiler Listesi", (accessed February 6, 2018)

Asarum europaeum (Rhizoma asari)	Ezarun, kedi otu, avşar otu, çetük otu, çoban düdüğü (kökü)	AB: 11 Esârûn
Bryonia dioica		RT: 145 Faşera
Alisma plantago-aguatica	Deniz mumyası, kazayağı	AB: 13 Kafrü'l-yehûd
Chenopodium albüm	Kazayağı	AB: 13 Kasabü'z-zerîre
Citrullus colocynthis (L.), Schrader (cucurbitaceae)	acıkarpuz	RT: 145 Hanzal
Citrullus colocynthis	Hanzal, Ebûcehil karpuzu, acı elma	AB: 12 Hanzal
Colchicum autumnale,	Surincan, itboğan, acı çiğdem, ucu eğri kestane	AB: 16 Sûrincân
Conium maculatum	Baldıran, şükran, lekeli baldıran kurunu's- sünbül	AB: 16 Şükrân, RT: 146
Convolvulus scammonia	Mahmude otu, yer pelidi, Mahmûde	AB: 14, RT:146
Cordia mixa	Sibistan, it memesi, Acem eriği, Mısır nabkı.	AB: 16 Sipistân
Croton tiglium (Semen crotonis)	Habbü's-selâtîn, Abdi selâtin, kroton (tohumu)	AB: 12,RT: 145
Datura stramonium	Tâtûre, Tatula otu, şeytan elması	AB: 16,RT: 147
Daphne mezereum	Dafne, mezeryon, gulapa	AB: 14 Mâzeryun
Delphinum staphisagria	Mevzek otu, bit otu, mezevek, kokar ot, dağ üzümü	AB: 15 Mevîzec
Dryopteris filix-mas	Eğrelti otu, serhas	AB:15 Serahs
Ecballium elaterium	Eşek hıyarı, karga düleği, acı dülek	AB: 14 Kıssâü'l-hımâr
Helleborus orientalis Lam.	Kara harbak	RT: 146
Helleborus niger	Siyah boynuz otu, kara çöpleme, karaca, ot, kış gülü, kaplan boğan	AB: 12 Harbak [-ı esved]
Heliotropium europaeum	Bambul otu, siğil otu, aygün çiçeği	AB: 10 Banbal otı
Hyoscyamus albus	Beyaz ban otu	AB: 9 Ak benç
Juniperus communis L.(cupressaceae)		RTArdıç tohumu:
Juniperus Sabina	Kara ardıç	AB: 11 Ebhel/Übhül
Lithospermum officinale	Göz darısı, taşkesen otu, inci otu,	AB: 12 Gözgü tarusı
Lycium europaeum	Teke dikeni	AB: 11 Fil-zehre[c]
Mandragora autumnalis bertol	Lüffah (adam otu kökü)	RT: 146
Mandragore autumnalis	Kan kurutan, kan kusturan, adam otu,insan otu, Abdüsselam otu	AB: 14 Luffâh
Nerium oleander	Zakkum ağacı	AB: 9 Agu agacı
Fructus papaver somniferum	Afyon, haşhaş, keyf otu	AB: 9 Afyon
Ricinus communis	Kene otu, dedemene genegerçek, Hindiye,	AB: 13 Kene
Ruta graveolens	Sedef otu, sezap otu, Sezâb	AB: 15 RT: 147
Solanum nigrum	İt üzümü, köpek üzümü İnebü's- sa'leb (tilki üzümü)	AB:13, RT: 146
Strychnos nux-vomica	Kargabüken ağacı (meyvesi)	AB: 10 Cevzü'l-kay
Teucrium chamaedrys	Yer meşesi, yer palamudu, kısamahmut, dalak otu, kemedris, hamadre	AB: 13 Kemâderyus
Urginea maritima	Ada soğanı, unsul, ansel, yaban soğanı	AB: 10 Basalü'l-unsul
Veratrum album	Beyaz harbak, ak çöpleme, marulcuk, yaban mazısı, kar çiçeği	AB: 12 Harbak-ı ebyaz
Viscum album	Burç, Gökçe, ökse, purç bitkisi	AB: 11 Dıbk
NAME OF THE SUBSTANCE IN LATIN	**NAME OF THE SUBSTANCE IN TURKISH**	**REFERENCE AND THE NAME USED IN THE PUBLICATION:**
Nitrum, sal petrae kalium nitricum, nitras kalicus, nitras potassicus, nitrim, sal nitrum, şal petrae, sal terrac : $Na_2B_4O_7.10\ H_2O$ $Na_2O\ .\ B_2O_3\ 10H_2O$ Borax :$NaNO_3$ or KNO_3, Güherçile	Bure (burak, borax, güherçile)	RT: 145
Na_2S: arsenicumtrisulfuratum, auripigmentum	Zırnıh (zırnık)	RT: 148
Hg: : aquaargentea, argentum liquidum hydrargyrum :mercury enecati, argenti vivi extincti.	cıva Zibak(zeybak, cıva) Zimbak-ı maktul	RT: 148
$HgCl_2$: hydrargyrum chloridum corrosivum	Sülümen (ak sülümen)	RT: 147
$CaCo_3$	Kireç: calcaria usta	RT: 146
S: sulphur, sülfür.	Kükürd (kibrit)	RT: 146

*PbO:*lithargyrum, plumbum oxidum, plumbum oxydatum fusum	Mürdesenk (mürdasenc, mürdaseng, mürtek, kurşun oksit)	RT:146
2 $PbCO_3$. $PbO(OH)_2$	Üstübec: cerussa, cerussa plumbica, carbonas plumbicus, albüm plumbi.	RT: 147
NH_4Clamonyum klorür:	Nuşadır (nişadır): amonyak	RT: 146
*As:*anhydridum arsenicasum, arşeni trioxidum, arsenicum crudum, arsenicum albüm.	Sıçanotu (arsenik, ak zırnık)	RT: 147
natrium carbonicum	Natron (kırmızı büre(red borax), kalya taşı)	RT:146
alumen, alumen kalinum, sulfas akımino- potassicus	Şebb (şap)	RT: 147
$FeSO_4$ or $Fe_2(SO_4)_3$:ferri sülfas, ferrosi sulfas, vitriolum ferri, sulfas ferri viridis, chalcitis, vitriolum viride, calchantum	Zac (kara boya, demir sülfat)	RT: 147
CuSO4	göztaşı	

6. TESTS FOR THE VERIFICATION OF TOXICITY WITH CELADONS:

Among the toxic materials listed in the table above, relatively easily accessible chemicals were selected and tested for the verification of toxicity with celadons. Celadon samples were prepared using the clay body and glaze from Gangjin, Korea. Gangjin is one of the two major cities produced Korean celadons between 10^{th} and 13^{th} centuries. The chemical compositions of the clay body and glaze are shown in Table 1. Clay bodies were dried and pulverized to powder using an auto pestle. The powder was pressed into bar shape using a uniaxial press. Pressed samples were fired at 900˚C, and then re-fired under reducing atmosphere at 1250˚C after glazing.

Test solutions were prepared using five chemicals including Pb_2O_3, As_2O_5, $CuSO_4$, Fe_2SO_4, and $HgCl_2$. 10 grams of each chemical were fully dissolved in 50 ml of deionized water for 24 hours. Three celadon samples were immersed in each test solution for time interval and inspected for colour variation using a spectrophotometer (CM-700d Minolta, Japan). The averaged CIEL*a*b* values among three samples were summarized in Table 3.

The series of experiments indicate no sign of colour change in celadon samples stored in the chemical solutions. Minor fluctuations in CIEL*a*b* values are shown for celadon samples, but no drastic change has appeared.

Table 1. Chemical compositions of celadon body and glaze

Chemical components	SiO_2	Al_2O_3	K_2O	Na_2O	MgO	CaO	Fe_2O_3	TiO_2	P_2O_5	L.O.I.
Clay body	69.00	15.90	2.46	0.37	0.53	0.39	1.87	0.84	0.03	8.51
Glaze	59.00	12.50	2.19	0.20	0.36	13.10	1.12	0.13	0.03	11.30

Table 2. Chromaticity of original celadon samples

	L*	a*	b*
As-received	55.54	-7.56	5.29

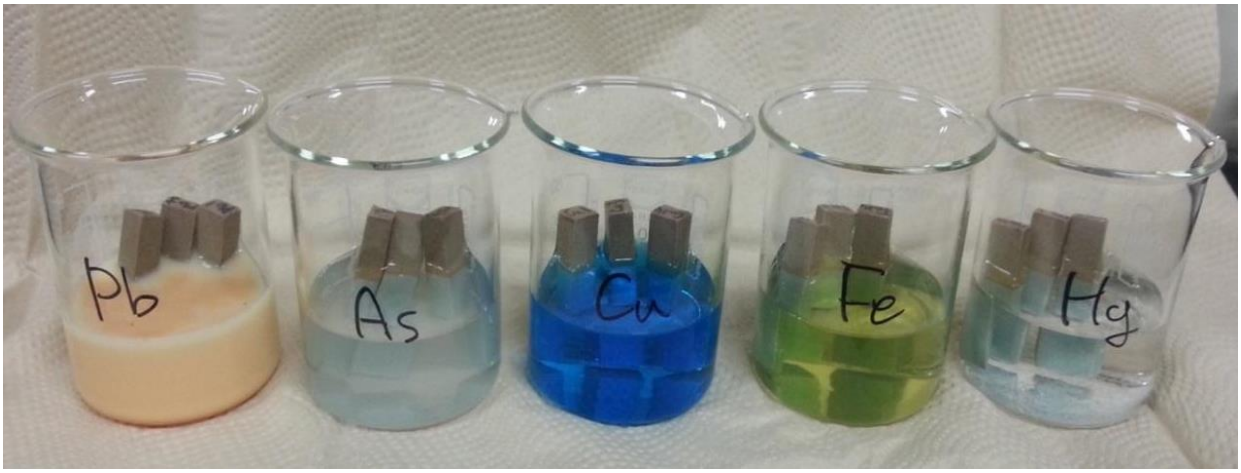

Fig.4. Celadon samples immersed in the test solutions.

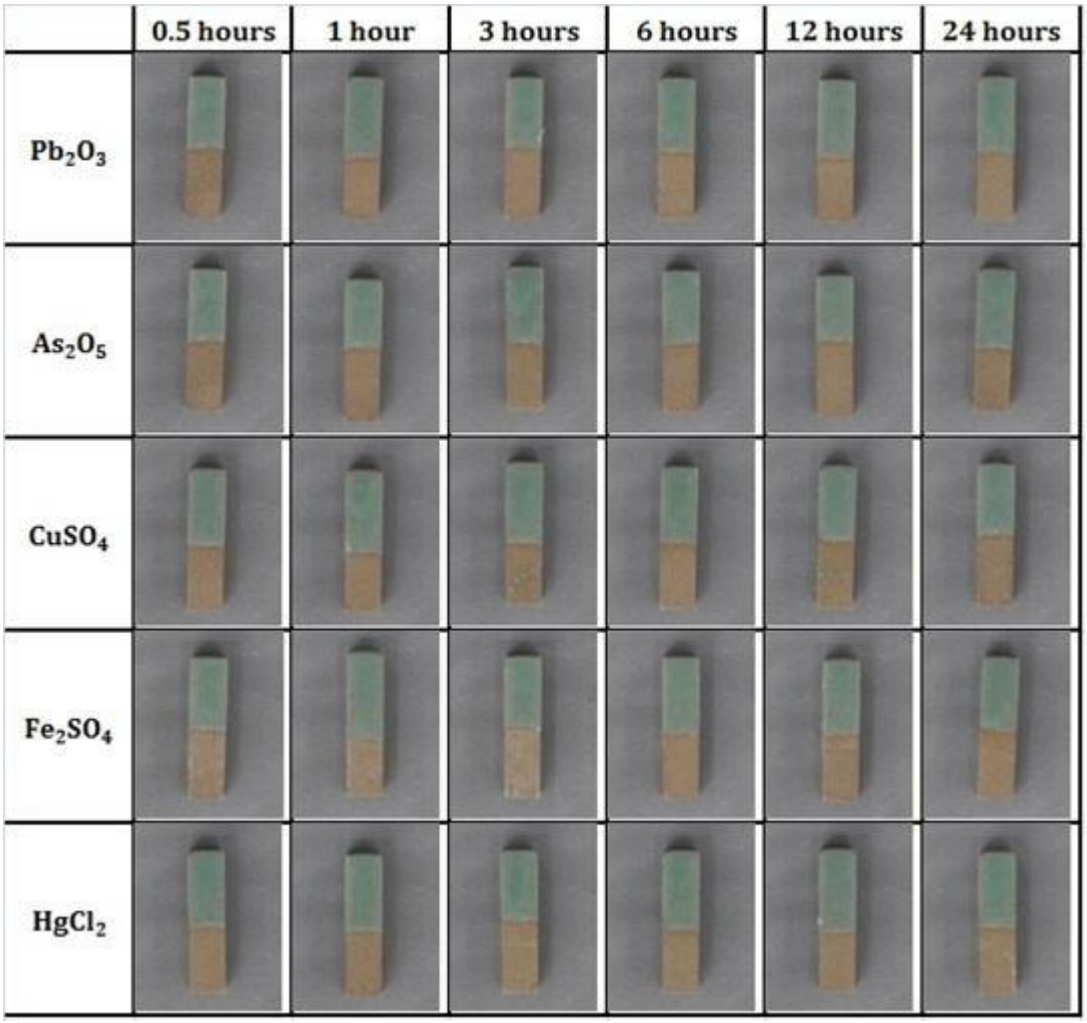

Fig. 5. Celadon samples after being immersed in the test solution for time intervals.

Table 3. Color variation of celadon samples after being immersed in the test solutions.

	CIELab values	0.5 hours	1 hour	3 hours	6 hours	12 hours	24 hours
Pb_2O_3	L*	54.48	56.15	56.20	56.23	57.23	55.37
	a*	-7.74	-6.74	-6.63	-7.24	-5.65	-7.80
	b*	5.30	5.22	5.05	5.29	5.00	4.85
As_2O_5	L*	55.72	55.45	55.06	55.52	55.38	56.66
	a*	-7.07	-7.35	-5.77	-7.38	-6.36	-6.23
	b*	5.12	5.09	4.83	5.33	4.80	5.51
$CuSO_4$	L*	55.64	56.53	56.15	56.02	55.83	54.33
	a*	-7.27	-6.07	-6.60	-7.04	-7.58	-7.55
	b*	5.24	5.20	5.03	5.48	5.12	5.03
Fe_2SO_4	L*	55.63	56.34	56.25	55.02	55.23	56.08
	a*	-7.03	-6.52	-6.50	-7.61	-7.16	-5.85
	b*	5.26	4.94	5.40	5.37	5.09	5.50
$HgCl_2$	L*	55.78	56.83	55.18	55.45	56.79	55.30
	a*	-7.33	-6.19	-8.20	-7.62	-5.43	-7.15
	b*	5.26	5.24	4.91	5.01	5.33	5.10

7. CONCLUSION

We can conclude based on these documents that the superstitious belief of celadon changing colour when touched by poison is a myth. And this myth emerged in Europe or in Ottoman Empire during the 16th century and supported by the Dutch East India Company's merchants during 17th century to make celadons more popular and valuable. The belief in jade stone in early times of Far East with its ability to protect from being poisoned must have affected the West due to the resemblance between celadon and jade stone.

It can be seen that, human beings try to solve certain problems that cannot be solved scientifically through faith. Creating a myth and gossip may be the fastest methods to disseminate information. Poisoning is remarkable as it can happen to anyone no matter what class they belong to. It is seen that celadon has gained popularity as a result of information dissemination which was developed against poisoning, simply by gossiping to earn more. It has been proved that there is no scientific truth in the fact that celadon protects from poisoning as a result of the experiments conducted at the end of this study.

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